CLAIM AMENDMENTS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended): One or more processor-accessible storage media comprising processor-executable instructions that, when executed, direct a first device to perform actions comprising:

accepting a connection ~~from a connecting device~~ at the first device a forwarder;

receiving data at the forwarder from the connecting device first device as a result of accepting the connection;

forwarding the data from the forwarder to a classifier;

determining, by the classifier, a second device for receiving the connection;

aggregating a connection state for the connection at the ~~first device~~ classifier by aggregating a protocol state of a first protocol stack and the data to constitute a binary blob; ~~and~~

sending the connection state from the classifier to the second device for injection into a second protocol stack at ~~a~~ the second device by sending the binary blob including the protocol state and the data to the second device, whereby the connection is transferred to the second device;

in conjunction with sending the connection state, adding an entry to a mapping table maintained by the forwarder that indicates the second device as a destination for packets for the connection;

sending a mapping for a flow identifier to the second device based upon the entry in the mapping table;

receiving subsequent communications from the connecting device by the forwarder;

encapsulating the subsequent communications by the forwarder according to the entry in the mapping table of the forwarder by inserting the flow identifier into the encapsulated communications; and

receiving the encapsulated communications at the second device from the forwarder, wherein the flow identifier serves to identify a flow of encapsulated communications as being associated with the connection to the connecting device.

2. (Currently Amended): The one or more processor-accessible storage media as recited in claim 1, further comprising, prior to the aggregating,

determining, by the classifier, the second device to receive migration of the connection state from among a plurality of second devices; and

passing a migrate connection function call to a topmost layer of the first protocol stack to initiate the aggregating of the connection state for migrating the connection state to the determined second device.

3. (Currently Amended): The one or more processor-accessible storage media as recited in claim 1, wherein the action of sending the connection state comprises an action of:

sending the binary blob including the protocol state and the data asynchronously to a connection migrator component at the second device, wherein the connection migrator component is configured to received receive the binary blob as a bundle, reassemble the connection state from the binary blob, and infuse the connection state into the second protocol stack at the second device.

4. (Previously Presented): The one or more processor-accessible storage media as recited in claim 1, wherein the action of aggregating comprises an action of:

compiling the protocol state from the first protocol stack for use in offloading the connection state as a binary blob, wherein the compiled protocol state includes destination and source ports and IP addresses.

5. (Previously Presented): The one or more processor-accessible storage media as recited in claim 4, wherein the action of compiling comprises an action of:

compiling the protocol state from the first protocol stack starting at a highest level of the first protocol stack, proceeding down the first protocol stack, to compile the protocol state, and then aggregating the received data with the compiled protocol state into the binary blob to be sent to the second device.

6. (Previously Presented): The one or more processor-accessible storage media as recited in claim 4, wherein the action of compiling comprises an action of:

compiling the protocol state from the first protocol stack at a transmission control protocol (TCP) stack portion and an internet protocol (IP) stack portion.

7. (Currently Amended): The one or more processor-accessible storage media as recited in claim 1, wherein the action of sending comprises actions of:

bundling the connection state with the mapping for a the flow identifier that corresponds to the connection to produce the binary blob; and

transmitting the binary blob having the flow identifier mapping bundled therein from the first device classifier to the second device.

8. (Currently Amended): The one or more processor-accessible storage media as recited in claim 1, wherein the action of sending comprises an action of:

transmitting the binary blob from the first device classifier to the second device asynchronously via the forwarder in a reliable manner such that the binary blob is received intact at the second device even if one or more packets that comprise the binary blob are lost or corrupted.

9. (Currently Amended): The one or more processor-accessible storage media as recited in claim 1, comprising the processor-executable instructions that, when executed, direct the first device classifier to perform further actions comprising:

selecting a the flow identifier for the connection responsive to a connection counter; and

sending mapping for the flow identifier to the second device for use by the second device in identifying a source of encapsulated ~~packets~~ communications received by the second device from the forwarder and corresponding to the connection.

10. (Currently Amended): The one or more processor-accessible storage media as recited in claim 1, wherein the processor-executable instructions, when executed, direct the ~~first device~~ forwarder to perform a further action comprising:

forwarding subsequent ~~packets~~ communications for the connection to the second device using ~~a~~ the flow identifier to encapsulate the subsequent ~~packets~~ communications, said encapsulated subsequent ~~packets~~ communications including the flow identifier in source and destination port fields of a TCP (Transmission Control Protocol) header.

11. (Currently Amended): One or more processor-accessible storage media comprising processor-executable instructions that, when executed, direct a first device and a second device to perform actions comprising:

accepting a connection from a connecting device by a forwarder at the first device;

receiving data at the first device as a result of accepting the connection;

aggregating, by a classifier at the first device, a connection state for the connection at the first device by aggregating a protocol state of a first protocol stack and the received data to constitute an aggregated connection state;

sending the aggregated connection state including the protocol state and the received data asynchronously from the first device to the second device;

receiving the aggregated connection state asynchronously at the second device, whereby the aggregated connection state comprised of the protocol state and the received data is received intact at the second device;

injecting the aggregated connection state for the connection into a network stack at the second device; and

in conjunction with sending the aggregated connection state, sending a mapping for a flow identifier from the first device to the second device, the flow identifier for identifying encapsulated packets received from the forwarder;

continuing the connection at the second device using the injected connection state;

receiving subsequent communications from the connecting device by the forwarder;

encapsulating the subsequent communications by the forwarder by inserting the flow identifier into the encapsulated communications according to a mapping table maintained by the forwarder; and

receiving the encapsulated communications at the second device from the forwarder, wherein the flow identifier serves to identify a flow of encapsulated communications as being associated with the connection to the connecting device according to the mapping for the flow identifier received from the first device.

12. (Currently Amended): The one or more processor-accessible storage media as recited in claim 11, wherein the action of continuing comprises an action of:

continuing the connection by ~~indicating~~ forwarding received packets ~~received by the forwarder to the second device, wherein the second device includes a migrator intermediate driver for buffering packets received prior to the injected aggregated connection state becoming active on the second device~~up to an application in accordance with the injected connection state.

13. (Previously Presented): The one or more processor-accessible storage media as recited in claim 11, wherein:

the action of receiving comprises actions of:

receiving the connection state as a binary blob asynchronously at the second device,

recognizing the binary blob as a blob for connection migration; and

the action of injecting comprises an action of:

infusing the protocol state into a second protocol stack forming a portion of the network stack at the second device, and

directing data from the binary blob to an application at the second device as if the second device were part of a new locally terminated connection.

14. (Previously Presented): The one or more processor-accessible storage media as recited in claim 11, wherein the action of injecting the connection state further comprises an action of:

indicating the data for the connection up the network stack toward an application.

15. (Previously Presented): The one or more processor-accessible storage media as recited in claim 11, wherein the action of injecting comprises an action of:

infusing the protocol state from the connection state into a second protocol stack forming a portion of the network stack.

16. (Previously Presented): The one or more processor-accessible storage media as recited in claim 15, wherein the action of infusing comprises an action of:

infusing the protocol state into the second protocol stack starting at a highest level of the second protocol stack.

17. (Currently Amended): The one or more processor-accessible storage media as recited in claim 11, wherein the action of receiving comprises an action of:

receiving a binary blob from the first device at the second device, the binary blob including the aggregated connection state bundled with the mapping for a the flow identifier that corresponds to the connection.

18. (Previously Presented): The one or more processor-accessible storage media as recited in claim 17, wherein the action of receiving comprises actions of:

unbundling the aggregated connection state and the mapping for the flow identifier at a level of the network stack that is below a second protocol stack portion of the network stack.

19. (Currently Amended): The one or more processor-accessible storage media as recited in claim 11, comprising the processor-executable instructions that, when executed, direct the second device to perform further actions comprising:

receiving ~~an encapsulation~~ the mapping for a flow identifier at the second device from the first device; and

storing the received ~~encapsulation~~ mapping in an encapsulation mapping table that ~~may be~~ is accessed according to the flow identifier; and

receiving the encapsulated ~~packets~~ communications at the second device from the forwarder at the first device, said encapsulated ~~packets~~ communications including the flow identifier in source and destination port fields of a TCP (Transmission Control Protocol) header.

20. (Currently Amended): The one or more processor-accessible storage media as recited in claim 11, wherein the processor-executable instructions, when executed, direct the second device to perform a further action comprising:

receiving from the first device the encapsulated ~~packets~~ communications that have ~~a~~ the flow identifier in source and destination port fields of a TCP (Transmission Control Protocol) header; and

de-encapsulating the encapsulated packets using an encapsulation mapping entry corresponding to the received mapping for the flow identifier that links the flow identifier to a source/destination pair.

21. - 86. (Canceled)

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87. (Currently Amended): One or more processor-accessible storage media comprising processor-executable instructions that, when executed, direct a first device and a second device to perform actions comprising:

~~_____~~ receiving a connection request by a forwarder at the first device from a client device;

accepting ~~a~~ the connection request at the first device by sending an acknowledgment packet to ~~a requester~~ the client device in response to ~~a~~ the connection request ~~requesting packet~~;

receiving data for the connection at the first device from the ~~requester~~ client device;

determining, by a classifier at the first device, the second device to which to migrate the connection from among a plurality of second devices, based upon the received data;

compiling a protocol state for the connection from a first protocol stack at the first device;

aggregating a connection state for the connection by aggregating the compiled protocol state and the received data to constitute a binary blob;

bundling a mapping for a flow identifier into the binary blob, wherein the flow identifier is used by the second device in identifying a source of encapsulated packets sent to the second device as subsequent communications from the first device corresponding to the connection;

sending the connection state from the first device by asynchronously sending the binary blob to the second device;

receiving the connection state as the bundled binary blob at the second device;

unbundling the aggregated connection state and the mapping for the flow identifier at a level that is below a second protocol stack at the second device;

injecting the connection state by the connection migrator component into the second protocol stack at the second device; ~~and~~

in conjunction with sending the connection state, adding an entry to a mapping table maintained by the forwarder that indicates the second device as a destination for subsequent communications for the connection, wherein the entry corresponds to the mapping for the flow identifier sent to the second device;

continuing the connection at the second device using the injected connection state;

receiving packets as subsequent communications from the client device by the forwarder at the first device;

encapsulating the packets by the forwarder by inserting the flow identifier into the encapsulated packets according to the entry in the mapping table maintained by the forwarder, wherein the flow identifier is encoded in source and destination fields of a TCP (Transmission Control Protocol) header of the encapsulated packet; and

receiving the encapsulated packets at the second device from the forwarder, wherein the flow identifier serves to identify a flow of encapsulated packets received by the second device from the forwarder as being associated with the connection with the client device.

88. (Currently Amended): A method of carrying out load balancing, comprising:

accepting a connection from a connecting device at a forwarder~~first device~~;

receiving data at the forwarder from the ~~first~~ connecting device as a result of accepting the connection;

forwarding the data from the forwarder to a classifier;

determining, by the classifier, a second device for receiving the connection;

aggregating a connection state for the connection at the ~~first device~~ classifier by aggregating a protocol state of a first protocol stack and the data to constitute a binary blob; ~~and~~

sending the connection state from the classifier to the second device for injection into a second protocol stack at ~~a~~ the second device by sending the binary blob including the protocol state and the data to the second device, whereby the connection is transferred to the second device;

in conjunction with sending the connection state, adding an entry to a mapping table maintained by the forwarder that indicates the second device as a destination for packets for the connection;

sending a mapping for a flow identifier to the second device based upon the entry in the mapping table;

receiving subsequent communications from the connecting device by the forwarder;

_____ encapsulating the subsequent communications by the forwarder according to the entry in the mapping table of the forwarder by inserting the flow identifier into the encapsulated communications; and

_____ receiving the encapsulated communications at the second device from the forwarder, wherein the flow identifier serves to identify a flow of encapsulated communications as being associated with the connection to the connecting device.

89. (Currently Amended): A method of carrying out load balancing, comprising:

accepting a connection from a connecting device by a forwarder at a first device;

receiving data at the first device as a result of accepting the connection;

aggregating, by a classifier at the first device, a connection state for the connection at the first device by aggregating a protocol state of a first protocol stack and the received data to constitute an aggregated connection state;

sending the aggregated connection state including the protocol state and the received data asynchronously from the first device to a second device;

receiving the aggregated connection state asynchronously at the second device, whereby the aggregated connection state comprised of the protocol state and the received data is received intact at the second device;

injecting the aggregated connection state for the connection into a network stack at the second device; and

in conjunction with sending the aggregated connection state, sending a mapping for a flow identifier from the first device to the second device, the flow identifier for identifying encapsulated packets received from the forwarder;

continuing the connection at the second device using the injected connection state;

receiving subsequent communications from the connecting device by the forwarder;

encapsulating the subsequent communications by the forwarder by inserting the flow identifier into the encapsulated communications according to a mapping table maintained by the forwarder; and

receiving the encapsulated communications at the second device from the forwarder, wherein the flow identifier serves to identify a flow of encapsulated communications as being associated with the connection to the connecting device according to the mapping for the flow identifier received from the first device.

90. (Currently Amended): A method of carrying out load balancing, comprising:

receiving a connection request by a forwarder at a first device from a client device;

accepting a the connection request at a the first device by sending an acknowledgment packet to a requester the client device in response to a the connection request requesting packet;

receiving data for the connection at the first device from the requester client device;

determining, by a classifier at the first device, a second device to which to migrate the connection from among a plurality of second devices, based upon the received data;

compiling a protocol state for the connection from a first protocol stack at the first device;

aggregating a connection state for the connection by aggregating the compiled protocol state and the received data to constitute a binary blob;

bundling a mapping for a flow identifier into the binary blob, wherein the flow identifier is used by the second device in identifying a source of encapsulated packets sent to the second device as subsequent communications from the first device corresponding to the connection;

sending the connection state from the first device by asynchronously sending the binary blob to the second device;

receiving the connection state as the bundled binary blob at the second device;

unbundling the aggregated connection state and the mapping for the flow identifier at a level that is below a second protocol stack at the second device;

injecting the connection state by the connection migrator component into the second protocol stack at the second device; and

in conjunction with sending the connection state, adding an entry to a mapping table maintained by the forwarder that indicates the second device as a destination for subsequent communications for the connection, wherein the entry corresponds to the mapping for the flow identifier sent to the second device;

continuing the connection at the second device using the injected connection state;

    receiving packets as subsequent communications from the client device by the forwarder at the first device;

    encapsulating the packets by the forwarder by inserting the flow identifier into the encapsulated packets according to the entry in the mapping table maintained by the forwarder, wherein the flow identifier is encoded in source and destination fields of a TCP (Transmission Control Protocol) header of the encapsulated packet; and

    receiving the encapsulated packets at the second device from the forwarder, wherein the flow identifier serves to identify a flow of encapsulated packets received by the second device from the forwarder as being associated with the connection with the client device.